REMARKS

In the Office Action, claims 1-24 and 27- 28 were rejected. By the present Response, claims 1 and 17 are amended. Upon entry of the amendments, claims 1-24 and 27 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. § 102

The Office Action summarizes claims 1-5, 10-20 and 23 and 27 as rejected under 35 U.S.C. §102(b) as being anticipated by Bunker et al. (U.S. Patent No. 6,234,755; hereinafter "Bunker"). Further, claims 1-5 and 27 are rejected under 35 U.S.C. §102(e) as being anticipated by Haselbach (U.S. Patent No. 6,817,833). Rejected claims 1and 17 are independent and will be discussed in detail below.

By the present response independent claims 1 and 17 are amended and claim 28 is canceled. Independent claims 1 and 17 and the claims depending there from are believed to be patentable for the reasons summarized below.

Claims 1 and 17

Amended claim 1 recites a method for forming a *plurality of discrete flow directors* on a component comprising a wall having at least one film-cooling hole extending through the wall and defining an exit site, *wherein at least one of the flow directors is associated with respective one of the at least one film cooling hole and wherein each of the flow directors comprises a three-dimensional projection disposed external to the cooling hole and having limited dimensions in three directions,* said method comprising depositing at least one layer on the wall of the component, wherein said deposition includes shaping the at least one layer in accordance with a predetermined shape to form each of the flow directors that extends outwards from the wall of the

component and through hot gas flow path to direct a coolant flowing from the film-cooling hole toward a hot surface of the wall, *wherein the flow director does not extend over the exit site.*

Amended claim 17 recites a method for forming a *plurality of discrete flow directors* on a turbine component comprising a wall having a cold surface and a hot surface, wherein at least one film-cooling hole extends through the wall for flowing a coolant from the cold surface to the hot surface, the film-cooling hole defining an exit site in the hot surface of the wall, *wherein at least one of the flow directors is associated with respective one of the at least one film cooling hole and wherein each of the flow directors comprises a three-dimensional projection disposed external to the cooling hole and having limited dimensions in three directions, said* method comprising:

depositing at least one layer on the wall of the component, wherein said deposition includes shaping the at least one layer in accordance with a predetermined shape to form each of the flow directors that extends outwards from the wall of the component and through hot gas flow path to direct the coolant flowing from the film-cooling hole toward the hot surface of the wall, *wherein the flow director does not extend over the exit site.*

Applicants thus submit that amended independent claims 1, and 17 recite, in generally similar language, forming a plurality a plurality of discrete flow directors, wherein at least one of the flow directors is associated with respective one of the at least one film cooling hole and wherein each of the flow directors comprises a three-dimensional projection disposed external to the cooling hole and having limited dimensions in three directions. Each of the flow director extends outwards from the wall of the component and through hot gas flow path to direct the coolant flowing from the film-cooling hole toward the hot surface of the wall, wherein the flow director does not extend

over the exit site. *See* Application, paragraphs [0027], [0033] [0037] and [0045];Fig. 1, Fig. 3, Fig. 16.

The Examiner argued that Bunker discloses a method of forming a flow director (by forming a slot over the holes) on a component comprising a wall by depositing at least one layer on the wall of the component, wherein said deposition includes shaping the layers in accordance with the predetermined shape of the flow director and therefore forming the flow director that extends radially outwards from the initial wall of the component and into a hot gas flow path . Further, the Examiner argued that there are two walls to the slot and therefore there is a plurality of discrete flow directors for each slot and one of the flow directors is associated with one of the film cooling holes. The Examiner cited passages at col. 2, lines 20-24 and lines 50-60 and Fig. 3in support of the rejection.

Applicants respectfully submit that first Bunker fails to teach a plurality of discrete flow directors wherein at least one of the flow directors is associated with respective one of the at least one film cooling hole. Rather, Bunker teaches forming a continuous slot over the cooling holes within a high temperature surface of the substrate. Furthermore, Bunker fails to teach flow directors that are three-dimensional projections disposed external to the cooling hole and having limited dimensions in three directions. Rather, Bunker teaches a slot/trench that does not have a limiting dimension in the main flow direction of the cooling air.

Bunker teaches a slot that would extend partly inwardly and perpendicularly from each hot surface toward the cooler surface. The slot also extends longitudinally along a selected dimension of holes Further, the slot serves as a spillway trench for coolant air exiting cooling holes. *See*, Bunker, col. 6, limes 27-35 and col. 7, lines 1-10. The slot of Bunker is a shaped recess formed within the protective coating and/or the substrate.

Further, such slot is an otherwise infinite surface without any limiting dimension in the main flow direction. Clearly, Bunker does not teach discrete flow directors, with at least one flow director associated with each cooling hole that is extending outwards from the surface and not extending over the exit site. Further, Bunker does not teach the flow directors to be three-dimensional projections with limiting dimensions in all three directions. Applicants respectfully submit that a *prima facie* case of anticipation cannot be supported by Bunker against claims 1 and 17.

With regard to amended independent claim 1, Haselbach does not teach a plurality of discrete flow directors, wherein the flow director is disposed external to the cooling hole and does not extend over an exit site of the cooling hole. The Examiner argued that Haselbach discloses the protrusion finishes off with the surface of the turbine blade and therefore does not extend over the exit site. Haselbach teaches a turbine blade having at least one cooling excavation. The cooling excavation extends into a surface of the turbine blade with a mouth. In the area of mouth a protrusion is provided that extends over a circumferential area of the mouth. Further, the protrusion may preferably feature a cross-sectional area projecting into the mouth. As can be seen, Haselbach does not disclose a flow director that is disposed external to the cooling hole and does not extend over the exit site of a cooling hole. The protrusion of Haselbach begins in the mouth of the cooling excavation and imparts a Coanda effect to the cooling air flow from the mouth. Haselbach does not teach a protrusion that is placed on the exterior surface and which does not extend over the mouth of the excavation. Applicants respectfully submit that a *prima facie* case of anticipation cannot be supported by Haselbach against claim 1.

Therefore, it is submitted that independent claims1 and 17 and their dependent claims are allowable and respectfully request the Examiner to reconsider rejection of the claim.

Rejections Under 35 U.S.C. § 103

The Office Action summarizes claims 1-5, 10-20, 23 and 27 as rejected under 35 U.S.C. §103(a) as being unpatentable over Bunker. Further, claims 6-9, 21 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bunker in view of Sabol et al. (U.S. Patent No. 6,060,174).

As discussed above, Bunker fails to teach a plurality of discrete flow directors wherein at least one of the flow directors is associated with respective one of the at least one film cooling hole. Rather, Bunker teaches forming a continuous slot over the cooling holes within a high temperature surface of the substrate. Furthermore, Bunker fails to teach flow directors that are three-dimensional projections disposed external to the cooling hole and having limited dimensions in three directions. Rather, Bunker teaches a slot/trench that does not have a limiting dimension in the main flow direction of the cooling air.

Claims 6-9, 21 and 22 depend from independent claims 1 and 17, respectively. Applicants respectfully submit that insomuch as independent claims 1 and 17 are allowable, these claims are allowable at least by virtue of their dependence from an allowable base claim.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

/Patrick K. Patnode/
Patrick K. Patnode
Reg. No. 40,121
General Electric Company
Building K1, Room 3A52a
Niskayuna, New York 12309
Telephone: (518) 387-5286
November 28, 2007